

REMARKS

This Reply is submitted in response to the outstanding Final Official Action. In view of the Remarks that follow, reconsideration and allowance of the claims is respectfully requested.

In the Official Action, it is gratefully acknowledged that claim 29 was allowed, and that claims 11-14 and 20 were indicated to be directed to allowable subject matter and only objected to for being dependent from a rejected base claim. Claims 6-10 and 15-19 were rejected under 35 U.S.C. § 102(b) as anticipated by, or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Yasukawa et al. Yasukawa et al. was cited as disclosing the mechanochemical preparation in water of calcium, magnesium and phosphorous sources that were stirred at room temperature, with crystalline magnesium hydroxyapatite resulting in the claimed molar ratios. This rejection is respectfully traversed for the reasons set forth hereinafter.

Yasukawa et al. prepared their magnesium hydroxyapatites in a screw-capped Teflon vessel at 100°C. It is not a stirred vessel. Therefore, there is no disclosure of the simultaneous mechanochemical and hydrothermal reaction method that is presently claimed. As explained in the specification at page 4, lines 12-14, the simultaneous application of mechanochemical and hydrothermal process steps are necessary to obtain phase-pure crystalline magnesium-substituted hydroxyapatite.

Significantly, Yasukawa et al. do not measure the amount of the amorphous magnesium phase. There is no evidence of magnesium incorporation into the hydroxyapatite lattice (i.e., crystalline magnesium-substituted hydroxyapatite) that is obtained by the presently claimed method.

The Table I data does not distinguish between crystalline and amorphous phases.

Yasukawa et al. themselves acknowledge that the X-Ray Diffraction pattern show that the materials become less crystalline and more amorphous as magnesium content increases. (See p. 1442 in the left-hand column under "XRD measurements"). This article represents nothing more than the acknowledged state-of-the-art in which the addition of magnesium to calcium hydroxyapatite results in minimal introduction of magnesium atoms to the hydroxyapatite lattice and instead the formation of an amorphous magnesium phase.

The presently claimed method, by simultaneously applying mechanochemical and hydrothermal process steps forms crystalline magnesium-substituted hydroxyapatite with significantly greater quantities of magnesium atoms incorporated into the hydroxyapatite lattice. Because Yasukawa et al. do not teach the simultaneous application of mechanochemical and hydrothermal process steps or the advantage obtained therefrom, namely the introduction of magnesium atoms into the hydroxyapatite lattice at heretofore unknown levels, this publication neither teaches nor suggests the presently claimed method.

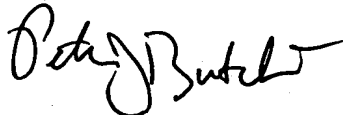
That is, claim 6, by being directed to a method in which the ion sources are simultaneously mechanochemically and hydrothermally reacted, patentably distinguishes over Yasukawa et al. under both 35 U.S.C. §§ 102(b) and 103(a). Claims 7-10 and 15-19 depend from claim 6 and are also directed to allowable subject matter on the basis of this feature. Reconsideration by the Examiner and withdrawal of this rejection is therefore respectfully requested.

In view of the above Remarks, this application is now in condition for allowance.

Reconsideration is therefore respectfully requested. If it is believed that there are objections remaining in this application, the Examiner is requested to telephone the undersigned at (215) 923-4466.

If there are any additional charges in connection with this Reply, the Examiner is authorized to charge Applicants' Deposit Account No. 19-5425.

Respectfully submitted,



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